Chapter 15

ANALYTICAL METHODS AND BASELINE VALUES

INTRODUCTION *15.1*

This chapter describes the analytical methods that EPA used to analyze the samples collected during EPA's data gathering efforts at a number of facilities. (These sampling efforts are described in section 2). It also discusses how EPA treated the results of its sample analysis for purpose of determining the loadings and proposed limitations and standards.

EPA compared each laboratory-reported analytical result for each pollutant to a baseline value in order to determine whether to use the value as reported in determining the loadings and proposed limitations and standards. In most cases, the baseline value was the "nominal quantitation limit"[1] stipulated for the specific method used to measure a particular pollutant. In general, the term "nominal quantitation limit" is used here to describe the smallest quantity of an analyte that can be measured reliably. In some cases, however, EPA used a value lower than the nominal quantitation limit as the baseline value because data demonstrated that reliable measurements could be obtained for at a lower level. In a few instances, EPA has concluded that the nominal quantitation limit for a specified method was less than that level that laboratories could reliably achieve. For those pollutants, EPA modified the nominal quantitation limit upward and used a higher value as the baseline value. Sections 15.3 and 15.4 provide further explanation of nominal quantitation limits and baseline values. Table 15-1 sets forth the analytical methods and baseline values used for each pollutant in developing the loadings and proposed limitations and standards.

ANALYTICAL RESULTS *15.2*

The laboratories expressed the result of the analysis either numerically or as "not quantitated"[2] for a pollutant in a sample. When the result is expressed numerically, then the pollutant was quantitated[3] in the sample. For example, for a hypothetical pollutant X, the result would be reported as "15 ug/L" when the laboratory quantitated the amount of pollutant X in the sample as being 15 ug/L. For the non-quantitated results, for each sample, the laboratories reported a "sample-specific quantitation limit." For example, for the hypothetical pollutant X, the result would be reported as "<10 ug/L" when the laboratory could not quantitate the amount of pollutant X in the sample. That is, the analytical result indicated a value less than the sample-specific quantitation limit of 10 ug/L. The actual amount of pollutant X in that sample is between zero (i.e., the pollutant is not present) and 10 ug/L. The

[1]In other chapters in this document and in the preamble to the proposed rulemaking, EPA uses the term "minimum analytical detection limit" when it refers to nominal quantitation limit or the baseline value.

[2]Elsewhere in this document and in the preamble to the proposed rulemaking, EPA refers to pollutants as "not detected" or "non-detected." This chapter uses the term "not quantitated" or "non-quantitated" rather than non-detected.

[3]Elsewhere in this document and in the preamble to the proposed rulemaking, EPA refers to pollutants as "detected." This chapter uses the term "quantitated" rather than detected.

sample-specific quantitation limit for a particular pollutant is generally the smallest quantity in the calibration range that may be measured reliably in any given sample. If a pollutant is reported as not quantitated in a particular wastewater sample, this does not mean that the pollutant is not present in the wastewater, merely that analytical techniques (whether because of instrument limitations, pollutant interactions or other reasons) do not permit its measurement at levels below the sample specific quantitation limit. In a few instances, some of the laboratories reported numerical results for specific pollutants detected in the samples as "right-censored." Right-censored measurements are those that were reported as being greater than the largest calibration value of the analysis (e.g., >1000 ug/L).

In calculating pollutant loadings, long-term averages and limitations, EPA generally substituted the value of the reported sample-specific quantitation limit for each non-quantitated result. In a few cases when the sample-specific quantitation limit was less than the baseline value, EPA substituted the baseline value for the non-quantitated result. In a few instances when the quantitated value was below the baseline value, EPA substituted the baseline value for the measured value. EPA further determined that these values should be considered non-quantitated in the statistical analyses. For the rare instances when the laboratory reported a measurement as right-censored, EPA used the largest calibration value in its calculations.

NOMINAL QUANTITATION LIMITS *15.3*

Protocols used for determination of nominal quantitation limits in a particular method depend on the definitions and conventions that EPA used at the time the method was developed. The nominal quantitation limits associated with the methods addressed in the following sections fall into three general categories. The first category includes Methods 1613, 1624, 1625, and 1664, which used the minimum level (ML) definition as the lowest level at which the entire analytical system must give a recognizable signal and an acceptable calibration point for the analyte. The second category pertains specifically to Method 1620, and is explained in detail in section 15.5.3. The third category pertains to the remainder of the methods (i.e., Method 85.01 and the classical wet chemistry methods), in which a variety of terms are used to describe the lowest level at which measurement results are quantitated. In some cases (especially with the classical wet chemistry analytes) the methods are older (1970s and 1980s) and different concepts of quantitation apply. These methods typically list a measurement range or lower limit of measurement. The terms differ by method and, as discussed in subsequent sections, the levels presented are not always representative of the lowest levels laboratories can achieve currently. For those methods associated with a calibration procedure, the laboratories demonstrated through a low point calibration standard that they were capable of reliable quantitation at method-specified (or lower) levels. In such cases these nominal quantitation limits are operationally equivalent to the ML (though not specifically identified as such in the methods). In the case of titrimetric or gravimetric methods, the laboratory adhered to the established lower limit of the measurement range published in the methods. Details of the specific methods are presented in the following sections.

BASELINE VALUES *15.4*

In developing the pollutant loadings and limitations, EPA compared each analytical result (i.e., quantitated value or sample-specific quantitation limit for a non-quantitated value) to a baseline value for the pollutant. (Section 10.4

describes this comparison.) For example, if a facility data set had five values for oil and grease of which two were non-quantitated with sample-specific quantitation limits of 10 mg/L and the remaining three values were quantitated with measurements of 20 mg/L, 25 mg/L, and 50 mg/L, then all five values (10 mg/L, 10 mg/L, 20 mg/L, 25 mg/L, and 50 mg/L) were compared to the baseline value of 5 mg/L for oil and grease. In most cases, the detected values and sample-specific quantitation limits were equal to or greater than the baseline values.

In general, the baseline value was equal to the nominal quantitation limit identified for the method. For example, for total cyanide, the baseline value was 0.02 mg/L which is the same as the nominal quantitation limit of 0.02 mg/L for total cyanide in method 335.2.

EPA made several exceptions to this general rule when EPA determined that the baseline value should differ from the nominal quantitation limit as specified in the method for a pollutant. For example, EPA determined that the baseline value for COD by method 410.1 should be 5 mg/L rather than the nominal quantitation limit of 50 mg/L. (Section 15.5.7 explains this decision.) EPA made exceptions to the general rule based upon EPA's knowledge about the methods, experiences with laboratories using those methods, and the need for a single baseline value for each pollutant. For example, EPA selected a baseline value to be less than a nominal quantitation limit when the laboratories demonstrated through calibration or other quality control (QC) data that reliable measurements of the pollutant could be made at a lower level. For these pollutants, the nominal quantitation limits reported in the methods are underestimates of what laboratories can reliably achieve and, the baseline values were adjusted downwards. Another example is when EPA selected baseline values greater than the nominal quantitation limits because the nominal quantitation limits could not be reliably achieved. A third example is when EPA selected a single baseline value when the pollutant was measured by two or more methods, each with a different nominal quantitation limit.

The following section provides a brief description of the analytical methods and explains any differences between the nominal quantitation limits and the baseline values.

Table 15-1 Analytical Methods and Baseline Values

Method	Analyte	CAS Number	Nominal Quantitation Value	Baseline Value	Unit	Assumption for Reported Values < Baseline Value
D4658	Total Sulfide	18496258	0.04	1.0	MG/L	used reported value
160.1	Total Dissolved Solids	C010	10.0	10.0	MG/L	n/a
160.2	Total Suspended Solids	C009	4.0	4.0	MG/L	n/a
1613	Dioxins	*				n/a
1620	Metals Compounds	*				used reported value
1624	Organic Compounds	*				modified
1625	Organic Compounds	*				modified
1664	HEM	C036	5.0	5.0	MG/L	modified
1664	SGT-HEM	C037	5.0	5.0	MG/L	modified
209F	Total Solids	C008	10.0	10.0	MG/L	n/a
218.4	Hexavalent Chromium	18540299	0.01	0.01	MG/L	n/a
335.2	Total Cyanide	57125	0.02	0.02	MG/L	used reported value
350.1	Ammonia as Nitrogen	7664417	0.01	0.01	MG/L	n/a
3500D	Hexavalent Chromium	18540299	0.1	0.1	MG/L	n/a
353.2	Nitrate/Nitrite	C005	0.05	0.05	MG/L	used reported value
365.2	Total Phosphorus	14265442	0.01	0.01	MG/L	n/a
376.1	Total Sulfide	18496258	1.0	1.0	MG/L	used reported value
405.1	BOD5	C003	2.0	2.0	MG/L	n/a
410.1	COD	C004	50.0	5.0**	MG/L	n/a
410.1	D-COD	C004D	50.0	5.0**	MG/L	n/a
410.2	COD	C004	5.0	5.0	MG/L	n/a
410.4	COD	C004	3.20	5.0	MG/L	n/a
413.1	Oil and Grease	C007	5.0	5.0	MG/L	n/a
415.1	Total Organic Carbon	C012	1.0	1.0	MG/L	n/a
420.2	Total Phenols	C020	0.01	0.05	MG/L	used reported value
85.01	Chlorinated Phenolics	*				n/a

* The method analyzed a number of pollutants. Attachment 15-1 identifies the all pollutants of concern and their baseline values. In general, the baseline values are equal to the nominal quantitation limits.
**The baseline value was adjusted to reflect the lowest nominal quantitation limit of the titrimetric procedures (i.e., 410.1 and 410.2). See Section 15.5.7 for a detailed explanation.
n/a: none of the data used for the pollutant loadings and limitations were reported below the baseline value.

ANALYTICAL METHODS 15.5

Table 15-1 provides a summary of the analytical methods, the associated pollutants measured by the method, the nominal quantitation levels, the baseline levels, and the assumptions for values reported below the baseline levels. Attachment 15-1 to this chapter provides a more complete list of the pollutants and their baseline values. The following subsections provide additional information supporting the summary in Table 15-1.

Methods 1613, 1624, 1625, 1664 (Dioxins, Organics, HEM) 15.5.1

As stated earlier, Method 1613 for dioxins, Methods 1624 and 1625 for organic compounds, and Method 1664[4] for *n*-hexane extractable material (HEM) and silica gel treated *n*-hexane extractable material (SGT-HEM)[5] use the minimum level concept for quantitation of the pollutants measured by the methods. The ML is defined as the lowest level at which the entire analytical system must give a recognizable signal and an acceptable calibration point for the analyte. When an ML is published in a method, the Agency has demonstrated that the ML can be achieved in at least one well-operated laboratory, and when that laboratory or another laboratory uses that method, the laboratory is required to demonstrate, through calibration of the instrument or analytical system, that it can make measurements at the ML. For these methods, EPA used the minimum levels as the baseline values.

If a measured value or sample-specific quantitation limit was reported with a value less than the ML specified in a method, EPA substituted the value of the ML and assumed that the measurement was non-quantitated. For example, if the ML was 10 ug/L and the laboratory reported a quantitated value of 5 ug/L, EPA assumed that the concentration was non-quantitated with a sample-specific quantitation limit of 10 ug/L.

Method 413.1 (Oil and Grease) 15.5.2

Method 413.1 was used in early sampling episodes to measure pollutant concentrations of oil and grease. Because this method requires freon, an ozone depleting solvent, to perform the analysis, EPA developed and recently promulgated Method 1664 to replace the procedures currently approved at 40 CFR 136. The same nominal quantitation limit applies to both methods for measuring oil and grease and HEM. In calculating the pollutant loadings and limitations, the data used from this method were all greater than the nominal quantitation limit of 5 mg/L.

Method 1620 15.5.3

Method 1620, which measures the amounts of specific metals in samples, uses the concept of an instrument detection limit (IDL) which is defined as "the smallest signal above background noise that an instrument can detect reliably."[6] IDLs are determined on a quarterly basis by each analytical laboratory participating in the data gathering efforts by EPA's Engineering and Analysis Division (EAD) and are, therefore, laboratory-specific and time-specific. Data

[4] See proposal at 61 *Federal Register* 1730, January 23, 1996.

[5] SGT-HEM measures non-polar material (i.e., n-hexane extractable material that is not absorbed by silica gel). Method 1664 measures both oil and grease and non-polar material.

[6] Keith, L.H., W. Crummett, J. Deegan, R.A. Libby, J.K. Taylor, G. Wentler (1983). "Principles of Environmental Analysis," *Analytical Chemistry*, Volume 55, Page 2217.

reporting practices for Method 1620 analysis follow conventional metals reporting practices used in other EPA programs, in which values are reported at or above the IDL. Though Method 1620 does contain minimum levels (MLs), these MLs pre-date EPA's recent refinement of the minimum level concept. The ML values associated with Method 1620 are based on a consensus opinion reached between EPA and laboratories during the 1980s regarding levels that could be considered reliable quantitation limits when using Method 1620. These limits do not reflect advances in technology and instrumentation since the 1980s. Consequently, the IDLs were used as the baseline for reporting purposes, with the general understanding that reliable results can be produced at or above the IDL.

The Method 1620 ML values were used as the baseline values in the data screening, with the exception of two analytes: boron and lead. Based on laboratory feedback years ago, it was determined that the boron ML of 10 ug/L specified in Table 9 of Method 1620 could not be reliably achieved. Consequently, for the purposes of EAD's data gathering under the metals contracts, the ML for boron was adjusted to 100 ug/L. In the case of lead, which has an ML of 5 ug/L associated with graphite furnace atomic absorption (GFAA) spectroscopy analysis, EAD determined that it was not necessary to measure down to such low levels, and that lead could be analyzed by inductively coupled plasma atomic emission (ICP) spectroscopy instead. Consequently, the ML requirement was adjusted to 50 ug/L.

Though the baseline values were derived from the MLs (or adjusted MLs) in Method 1620, EPA used the laboratory reported values, which captured concentrations down to the IDLs, in calculating the pollutant loadings and limitations. If the long-term average for a pollutant was less than the baseline value, however, EPA substituted the ML for the long-term average and re-calculated the limitation using this revised long-term average and the group variability factor.

Method 85.01 *15.5.4*

NCASI Method 85.01 was used to analyze some samples associated with the organics subcategory for chlorinated phenolics. This gas chromatography/electron capture detector (GC/ECD) method predates EPA Method 1653 for chlorinated phenolics determination, and was only used for analysis of samples under one CWT sampling episode (Episode 1987, collected in 1990). Method 1653 is an isotope dilution gas chromatography/mass spectrometry (GC/MS) method. EPA intends to use this method, rather than Method 85.01, for any subsequent data gathering for analyses of chlorinated phenolics not included in semivolatiles organics Method 1625.

Some chlorinated phenolics in Episode 1987 were analyzed by both Method 85.01 and Method 1625. Thus, for a given sample, there were two results for a specific chlorinated phenolic compound. Of the pollutants of concern, these compounds were pentachlorophenol, 2,3,4,6-tetrachlorophenol, 2,4,5-trichlorophenol, and 2,4,6-trichlorophenol. Where two results were provided for the same pollutant in a sample, EPA used the analytical result from Method 1625. This decision is based on the knowledge that Method 1625 is an isotope dilution GC/MS procedure, and therefore produces more reliable results than Method 85.01.

For the remaining chlorinated phenolics analytes that were determined by Method 85.01, EPA used the laboratory-specific quantitation limits as the baseline values (see Table 15-2 below). In all cases, the data used to calculate the pollutant loadings were greater than or equal to the baseline value associated with the pollutant.

Table 15-2 Baseline values for Method 85.01

Analyte	CAS Number	Minimum Level (mg/L)
3,4-dichlorophenol	95772	0.0008
3,4,5-trichlorocatechol	56961207	0.0008
3,4,6-trichloroguaiacol	60712449	0.0008
3,5-dichlorophenol	591355	0.0008
3,6-dichlorocatechol	3938167	0.0008
4-chlorophenol	106489	0.24
4,5-dichloroguaiacol	2460493	0.0008
4,5,6-trichloroguaiacol	2668248	0.0008
5-chloroguaiacol	3743235	0.16
6-chlorovanillin	18268763	0.0008

Methods D4658 and 376.1 (Total Sulfide) 15.5.5

Total sulfide was analyzed by Methods 376.1 and D4658, each of which have different nominal quantitation limits. Method 376.1 has a nominal quantitation limit of 1 mg/L, while Method D4658 has a nominal quantitation limit of 0.04 mg/L. Rather than use two different baseline values for the same pollutant, EPA used the maximum of the two values (i.e., 1 mg/L) as the baseline value.

In some cases, the reported value was lower than the nominal quantitation limits identified in the method. EPA used these values as reported in calculating the pollutant loadings. (EPA has not proposed limitations for total sulfide.)

Methods 410.1, 410.2, and 410.4 (COD and D-COD) 15.5.6

Methods 410.1, 410.2, and 410.4 were used to measure COD concentrations. In addition, Method 410.1 was used to measure the D-COD concentrations in Episode 1987.

Methods 410.1 and 410.2 are titrimetric procedures that follow identical analytical protocols, with the exception of the concentration level of the reagents used for the titration. Method 410.1 is designed to measure “mid-level” concentrations greater than 50 mg/L for chemical oxygen demand (COD) and D-chemical oxygen demand (D-COD). Method 410.2 is designed to measure “low-level” concentrations of those parameters in the range of 5-50 mg/L. When one of the participating laboratories analyzes a sample, they are required to measure down to the lowest quantitation limit possible.

Consequently, if the laboratory analyzes a sample using Method 410.1 and obtains a non-quantitated result, it must reanalyze the sample using Method 410.2. Therefore, the quantitation limit reported for non-quantitations will be equal to 5 mg/L, unless sample dilutions were required because of matrix complexities.

Method 410.4 is a colorimetric procedure with a measurement range of 3-900 mg/L for automated procedures and measurement range of 20-900 mg/L for manual procedures.

For all COD data, EPA used the baseline value of 5 mg/L that is associated with the lower quantitation limit for the titrimetric procedures because most of the data had been obtained by the titrimetric procedures (i.e., Methods 410.1 or 410.2). Regardless of the method used to analyze COD and D-COD, all values used to calculate the pollutant loadings were greater than the nominal quantitation limit of 5 mg/L. (EPA is not proposing limitations for COD.)

Method 420.2 (Total Phenols) 15.5.7

Method 420.2 was used to analyze for total phenols. The method reports two “working ranges”; one with a lower range limit of 0.002 mg/L and the other with a lower range limit of 0.01 mg/L. In this case, EPA’s experience with the laboratories has indicated that some can meet the lower limits of the method-specified range and others cannot. Consequently, EPA determined that the baseline value should be 0.05 mg/L, which reflects that quantitation limit that all participating laboratories were capable of achieving.

In some cases, the reported value was lower than the baseline value of 0.05 mg/L. Because some laboratories have demonstrated that they can quantitate to lower levels, EPA used these values as reported in calculating the pollutant loadings. (EPA has not proposed limitations for total phenols.)

Method 218.4 and 3500D (Hexavalent Chromium) 15.5.8

Hexavalent chromium was determined by Methods 218.4 and 3500D. Because most of the samples were analyzed using Method 218.4, its baseline value of 0.01 mg/L was used for all hexavalent chromium results. None of the quantitated values and sample-specific quantitation limits were reported with values less than this baseline value.

Methods 335.2 and 353.2 (Total Cyanide and Nitrate/Nitrate) 15.5.9

Samples were analyzed for total cyanide and nitrate/nitrate using Methods 335.2 and 353.2, respectively. Within each method, the nominal quantitation limit and the baseline value were the same.

In some cases, the reported value was lower than the baseline value for the pollutant. Because some laboratories have demonstrated that they can quantitate to lower levels, EPA used these values as reported in calculating the pollutant loadings and limitations.

Remaining Methods 15.5.10

The previous subsections in section 15.5 identify many of the methods used to analyze the wastewater samples. The remaining methods were: 160.1 (total dissolved solids), 160.2 (total suspended solids), 209F (total solids), 350.1 (ammonia as nitrogen), 365.2 (total phosphorus), 405.1 (5-day biochemical oxygen demand), and 415.1 (total organic carbon). For these methods, the nominal quantitation limits and the baseline values were equal. In addition, none of the values were reported below the nominal quantitation limits.

Of the pollutants measured by these methods, EPA proposed limitations for total suspended solids (TSS) and 5-day biochemical oxygen demand (BOD_5).

ANALYTICAL METHOD DEVELOPMENT EFFORTS 15.6

Section 304(h) of the Clean Water Act directs EPA to promulgate guidelines establishing test procedures for the analysis of pollutants. These methods allow the analyst to determine the presence and concentration of pollutants in wastewater, and are used for compliance monitoring and for filing applications for the NPDES program under 40 CFR 122.21, 122.41, 122.44 and 123.25, and for the implementation of the pretreatment standards under 40 CFR 403.10 and 403.12. To date, EPA has promulgated methods for all conventional and toxic pollutants, and for some nonconventional pollutants. EPA has identified five pollutants pursuant to section 304(a)(4) of the CWA defined as “conventional pollutants” (See 40 CFR 401.16). Table I-B at 40 CFR 136 lists the analytical methods approved for these pollutants. EPA has listed pursuant to section 307(a) of the Act, 65 metals and organic pollutants and classes of pollutants as “toxic pollutants” at 40 CFR 401.15. From the list of 65 classes of toxic pollutants, EPA identified a list of 126 "Priority Pollutants." This list of Priority Pollutants is shown, for example, at 40 CFR Part 423, Appendix A. The list includes non-pesticide organic pollutants, metal pollutants, cyanide, asbestos, and pesticide pollutants.

Currently approved methods for metals and cyanide are included in the table of approved inorganic test procedures at 40 CFR 136.3, Table I-B. Table I-C at 40 CFR 136.3 lists approved methods for measurement of non-pesticide organic pollutants, and Table I-D lists approved methods for the toxic pesticide pollutants and for other pesticide pollutants. Dischargers must use the test methods promulgated at 40 CFR Part 136.3 or incorporated by reference in the tables, when available, to monitor pollutant discharges from the centralized waste treatment (CWT) industry, unless specified otherwise in Part 437 or by the permitting authority.

Table I-C does not list 11 CWT semivolatile organic pollutants and two CWT volatile organic pollutants (2-butanone and 2-propanone). However, the analyte list for EPA Method 1624 contains both volatile organic pollutants and the analyte list for EPA Method 1625 contains four of the semivolatile organic pollutants. EPA promulgated both of these methods for use in Clean Water Act measurement programs at 40 CFR 136, Appendix A. As a part of this rulemaking, EPA is proposing to allow the use of EPA Method 1624 for the determination of the CWT volatile organic pollutants and modified versions of EPA Methods 625 and 1625 for the determination of all CWT semivolatile organic pollutants. The proposed modifications to EPA Methods 625 and 1625 have been included in the Docket for this rulemaking. The modified versions of Methods 625 and 1625 will allow the analysis of all CWT semivolatile organic pollutants by each method. If EPA adopts these proposed modifications, the following pollutants will be added to their respective analyte lists:

Additions to EPA Method 1625 and Method 625

Pollutant	CASRN
acetophenone	98-86-2
aniline	62-53-3
benzoic acid	65-85-0
2,3-dichloroaniline	608-27-5
o-cresol	95-48-7
p-cresol	160-44-5
pyridine	110-86-1

Additions to EPA Method 625

Pollutant	CASRN
alpha-terpineol	98-55-5
carbazole	86-74-8
n-decane	124-18-5
n-octadecane	593-45-3

These pollutants were found in CWT industry wastewaters in EPA's data gathering. The modifications to Methods 625 and 1625 consist of text, performance data, and preliminary quality control (QC) acceptance criteria for the additional analytes, if available. This information will allow a laboratory to practice the methods with the additional analytes as an integral part. The QC acceptance criteria for the additional analytes to be added to Method 1625 have been validated in single-laboratory studies. EPA plans further validation of these method modifications by use in subsequent data gathering for the final rule and plans to promulgate these method modifications for monitoring at 40 CFR part 437 (see 40 CFR 401.13) or at 40 CFR part 136 in the final rule for this rulemaking.

On March 28, 1997, EPA proposed a means to streamline the method development and approval process (62 FR 14975) and on October 6, 1997, EPA published a notice of intent to implement a performance-based measurement system (PBMS) in all of its programs to the extent feasible (62 FR 52098). The Agency is currently determining the specific steps necessary to implement PBMS in all of its regulatory programs and has approved a plan for implementation of PBMS in the water programs. Under PBMS, regulated entities will be able to modify methods without prior approval and will be able to use new methods without prior EPA approval provided they notify the regulatory authority to which the data will be reported. EPA expects a final rule implementing PBMS in the water programs by the end of calendar year 1998. When the final rule takes effect, regulated entities in the CWT industry will be able to select methods for monitoring other than those approved at 40 CFR parts 136 and 437 provided that certain validation requirements are met. Many of the details were provided at proposal (62 FR 14975) and will be finalized in the final PBMS rule.

ATTACHMENT 15-1: Pollutants of Concern and their Baseline Values

Analyte Name	CAS Number	Method	Baseline Value	Unit
ACENAPHTHENE	83329	1625	10.0000	UG/L
ACETOPHENONE	98862	1625	10.0000	UG/L
ALPHA-TERPINEOL	98555	1625	10.0000	UG/L
ALUMINUM	7429905	1620	200.0000	UG/L
AMMONIA AS NITROGEN	7664417	350.1	10.0000	UG/L
ANILINE	62533	1625	10.0000	UG/L
ANTHRACENE	120127	1625	10.0000	UG/L
ANTIMONY	7440360	1620	20.0000	UG/L
ARSENIC	7440382	1620	10.0000	UG/L
BARIUM	7440393	1620	200.0000	UG/L
BENZENE	71432	1624	10.0000	UG/L
BENZO(A)ANTHRACENE	56553	1625	10.0000	UG/L
BENZO(A)PYRENE	50328	1625	10.0000	UG/L
BENZO(B)FLUORANTHENE	205992	1625	10.0000	UG/L
BENZO(K)FLUORANTHENE	207089	1625	10.0000	UG/L
BENZOIC ACID	65850	1625	50.0000	UG/L
BENZYL ALCOHOL	100516	1625	10.0000	UG/L
BERYLLIUM	7440417	1620	5.0000	UG/L
BIOCHEMICAL OXYGEN DEMAND	C-003	405.1	2000.0000	UG/L
BIPHENYL	92524	1625	10.0000	UG/L
BIS(2-ETHYLHEXYL) PHTHALATE	117817	1625	10.0000	UG/L
BOD 5-DAY	C-003	405.1	2000.0000	UG/L
BORON	7440428	1620	100.0000	UG/L
BROMODICHLOROMETHANE	75274	1624	10.0000	UG/L
BUTYL BENZYL PHTHALATE	85687	1625	10.0000	UG/L
CADMIUM	7440439	1620	5.0000	UG/L
CARBAZOLE	86748	1625	20.0000	UG/L

ATTACHMENT 15-1: Pollutants of Concern and their Baseline Values

Analyte Name	CAS Number	Method	Baseline Value	Unit
CARBON DISULFIDE	75150	1624	10.0000	UG/L
CHEMICAL OXYGEN DEMAND (COD)	C-004	410.1	5000.0000	UG/L
		410.2	5000.0000	UG/L
		410.4	5000.0000	UG/L
CHLOROBENZENE	108907	1624	10.0000	UG/L
CHLOROFORM	67663	1624	10.0000	UG/L
CHROMIUM	7440473	1620	10.0000	UG/L
CHRYSENE	218019	1625	10.0000	UG/L
COBALT	7440484	1620	50.0000	UG/L
COPPER	7440508	1620	25.0000	UG/L
D-CHEMICAL OXYGEN DEMAND (COD)	C-004D	410.1	5000.0000	UG/L
DI-N-BUTYL PHTHALATE	84742	1625	10.0000	UG/L
DIBENZOFURAN	132649	1625	10.0000	UG/L
DIBENZOTHIOPHENE	132650	1625	10.0000	UG/L
DIBROMOCHLOROMETHANE	124481	1624	10.0000	UG/L
DIETHYL ETHER	60297	1624	50.0000	UG/L
DIETHYL PHTHALATE	84662	1625	10.0000	UG/L
DIMETHYL SULFONE	67710	1625	10.0000	UG/L
DIPHENYL ETHER	101848	1625	10.0000	UG/L
ENDOSULFAN SULFATE	1031078	1618	0.0200	UG/L
		1656	0.0200	UG/L
ETHANE, PENTACHLORO-	76017	1625	20.0000	UG/L
ETHYLBENZENE	100414	1624	10.0000	UG/L
ETHYLENETHIOUREA	96457	1625	20.0000	UG/L
FLUORANTHENE	206440	1625	10.0000	UG/L
FLUORENE	86737	1625	10.0000	UG/L
GALLIUM	7440553	1620	500.0000	UG/L
GERMANIUM	7440564	1620	500.0000	UG/L
HEXACHLOROETHANE	67721	1625	10.0000	UG/L
HEXANE EXTRACTABLE MATERIAL	C-036	1664	5000.0000	UG/L

ATTACHMENT 15-1: Pollutants of Concern and their Baseline Values

Analyte Name	CAS Number	Method	Baseline Value	Unit
HEXANOIC ACID	142621	1625	10.0000	UG/L
HEXAVALENT CHROMIUM	18540299	218.4	10.0000	UG/L
		3500D	10.0000	UG/L
INDIUM	7440746	1620	1000.0000	UG/L
IODINE	7553562	1620	1000.0000	UG/L
IRIDIUM	7439885	1620	1000.0000	UG/L
IRON	7439896	1620	100.0000	UG/L
ISOPHORONE	78591	1625	10.0000	UG/L
LEAD	7439921	1620	50.0000	UG/L
LITHIUM	7439932	1620	100.0000	UG/L
LUTETIUM	7439943	1620	100.0000	UG/L
M-XYLENE	108383	1624	10.0000	UG/L
MAGNESIUM	7439954	1620	5000.0000	UG/L
MANGANESE	7439965	1620	15.0000	UG/L
MERCURY	7439976	1620	0.2000	UG/L
METHYLENE CHLORIDE	75092	1624	10.0000	UG/L
MOLYBDENUM	7439987	1620	10.0000	UG/L
N-DECANE	124185	1625	10.0000	UG/L
N-DOCOSANE	629970	1625	10.0000	UG/L
N-DODECANE	112403	1625	10.0000	UG/L
N-EICOSANE	112958	1625	10.0000	UG/L
N-HEXACOSANE	630013	1625	10.0000	UG/L
N-HEXADECANE	544763	1625	10.0000	UG/L
N-NITROSOMORPHOLINE	59892	1625	10.0000	UG/L
N-OCTADECANE	593453	1625	10.0000	UG/L
N-TETRACOSANE	646311	1625	10.0000	UG/L
N-TETRADECANE	629594	1625	10.0000	UG/L
N,N-DIMETHYLFORMAMIDE	68122	1625	10.0000	UG/L

ATTACHMENT 15-1: Pollutants of Concern and their Baseline Values

Analyte Name	CAS Number	Method	Baseline Value	Unit
NAPHTHALENE	91203	1625	10.0000	UG/L
NEODYMIUM	7440008	1620	500.0000	UG/L
NICKEL	7440020	1620	40.0000	UG/L
NIOBIUM	7440031	1620	1000.0000	UG/L
NITRATE/NITRITE	C-005	353.2	50.0000	UG/L
O+P XYLENE	136777612	1624	10.0000	UG/L
O-CRESOL	95487	1625	10.0000	UG/L
OCDF	39001020	1613	0.0001	UG/L
OSMIUM	7440042	1620	100.0000	UG/L
P-CRESOL	106445	1625	10.0000	UG/L
P-CYMENE	99876	1625	10.0000	UG/L
PENTACHLOROPHENOL	87865	1625	50.0000	UG/L
		85.01	.	
PENTAMETHYLBENZENE	700129	1625	10.0000	UG/L
PHENANTHRENE	85018	1625	10.0000	UG/L
PHENOL	108952	1625	10.0000	UG/L
PHOSPHORUS	7723140	1620	1000.0000	UG/L
PYRENE	129000	1625	10.0000	UG/L
PYRIDINE	110861	1625	10.0000	UG/L
SELENIUM	7782492	1620	5.0000	UG/L
SGT-HEM	C-037	1664	5000.0000	UG/L
SILICON	7440213	1620	100.0000	UG/L
SILVER	7440224	1620	10.0000	UG/L
STRONTIUM	7440246	1620	100.0000	UG/L
STYRENE	100425	1625	10.0000	UG/L
SULFUR	7704349	1620	1000.0000	UG/L
TANTALUM	7440257	1620	500.0000	UG/L
TELLURIUM	13494809	1620	1000.0000	UG/L

ATTACHMENT 15-1: Pollutants of Concern and their Baseline Values

Analyte Name	CAS Number	Method	Baseline Value	Unit
TETRACHLOROETHENE	127184	1624	10.0000	UG/L
TETRACHLOROMETHANE	56235	1624	10.0000	UG/L
THALLIUM	7440280	1620	10.0000	UG/L
TIN	7440315	1620	30.0000	UG/L
TITANIUM	7440326	1620	5.0000	UG/L
TOLUENE	108883	1624	10.0000	UG/L
TOTAL CYANIDE	57125	335.2	20.0000	UG/L
TOTAL DISSOLVED SOLIDS	C-010	160.1	10000.0000	UG/L
TOTAL ORGANIC CARBON (TOC)	C-012	415.1	1000.0000	UG/L
TOTAL PHENOLS	C-020	420.2	50.0000	UG/L
TOTAL PHOSPHORUS	14265442	365.2	10.0000	UG/L
TOTAL RECOVERABLE OIL AND GREASE	C-007	413.1	5000.0000	UG/L
TOTAL SOLIDS	C-008	209F	10000.0000	UG/L
TOTAL SULFIDE	18496258	D4658	1000.0000	UG/L
		376.1	1000.0000	UG/L
TOTAL SUSPENDED SOLIDS	C-009	160.2	4000.0000	UG/L
TRANS-1,2-DICHLOROETHENE	156605	1624	10.0000	UG/L
TRIBROMOMETHANE	75252	1624	10.0000	UG/L
TRICHLOROETHENE	79016	1624	10.0000	UG/L
TRIPROPYLENEGLYCOL METHYL ETHER	20324338	1625	99.0000	UG/L
VANADIUM	7440622	1620	50.0000	UG/L
VINYL CHLORIDE	75014	1624	10.0000	UG/L
YTTRIUM	7440655	1620	5.0000	UG/L
ZINC	7440666	1620	20.0000	UG/L
ZIRCONIUM	7440677	1620	100.0000	UG/L
1-METHYLFLUORENE	1730376	1625	10.0000	UG/L
1-METHYLPHENANTHRENE	832699	1625	10.0000	UG/L

ATTACHMENT 15-1: Pollutants of Concern and their Baseline Values

Analyte Name	CAS Number	Method	Baseline Value	Unit
1,1-DICHLOROETHANE	75343	1624	10.0000	UG/L
1,1-DICHLOROETHENE	75354	1624	10.0000	UG/L
1,1,1-TRICHLOROETHANE	71556	1624	10.0000	UG/L
1,1,1,2-TETRACHLOROETHANE	630206	1624	10.0000	UG/L
1,1,2-TRICHLOROETHANE	79005	1624	10.0000	UG/L
1,1,2,2-TETRACHLOROETHANE	79345	1624	10.0000	UG/L
1,2-DIBROMOETHANE	106934	1624	10.0000	UG/L
1,2-DICHLOROBENZENE	95501	1625	10.0000	UG/L
1,2-DICHLOROETHANE	107062	1624	10.0000	UG/L
1,2,3-TRICHLOROPROPANE	96184	1624	10.0000	UG/L
1,2,4-TRICHLOROBENZENE	120821	1625	10.0000	UG/L
1,3-DICHLOROPROPANE	142289	1624	10.0000	UG/L
1,4-DICHLOROBENZENE	106467	1625	10.0000	UG/L
1,4-DIOXANE	123911	1624	10.0000	UG/L
1234678-HPCDF	67562394	1613	0.0001	UG/L
2-BUTANONE	78933	1624	50.0000	UG/L
2-METHYLNAPHTHALENE	91576	1625	10.0000	UG/L
2-PHENYLNAPHTHALENE	612942	1625	10.0000	UG/L
2-PICOLINE	109068	1625	50.0000	UG/L
2-PROPANONE	67641	1624	50.0000	UG/L
2,3-BENZOFLUORENE	243174	1625	10.0000	UG/L
2,3-DICHLOROANILINE	608275	1625	10.0000	UG/L
2,3,4,6-TETRACHLOROPHENOL	58902	1625	20.0000	UG/L
		85.01	.	
2,4-DIMETHYLPHENOL	105679	1625	10.0000	UG/L
2,4,5-TP	93721	1618	0.0400	UG/L
2,4,5-TRICHLOROPHENOL	95954	1625	10.0000	UG/L
		85.01	.	

ATTACHMENT 15-1: Pollutants of Concern and their Baseline Values

Analyte Name	CAS Number	Method	Baseline Value	Unit
2,4,6-TRICHLOROPHENOL	88062	1625	10.0000	UG/L
		85.01	.	
2378-TCDF	51207319	1613	0.0000	UG/L
3,4-DICHLOROPHENOL	95772	85.01	0.8000	UG/L
3,4,5-TRICHLOROCATECHOL	56961207	85.01	0.8000	UG/L
3,4,6-TRICHLOROGUAIACOL	60712449	85.01	0.8000	UG/L
3,5-DICHLOROPHENOL	591355	85.01	0.8000	UG/L
3,6-DICHLOROCATECHOL	3938167	85.01	0.8000	UG/L
3,6-DIMETHYLPHENANTHRENE	1576676	1625	10.0000	UG/L
4-CHLORO-3-METHYLPHENOL	59507	1625	10.0000	UG/L
4-CHLOROPHENOL	106489	85.01	240.0000	UG/L
4-METHYL-2-PENTANONE	108101	1624	50.0000	UG/L
4,5-DICHLOROGUAIACOL	2460493	85.01	0.8000	UG/L
4,5,6-TRICHLOROGUAIACOL	2668248	85.01	0.8000	UG/L
5-CHLOROGUAIACOL	3743235	85.01	160.0000	UG/L
6-CHLOROVANILLIN	18268763	85.01	0.8000	UG/L